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PATENT 4479C (CON)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Müller, et al.
Serial No.: 10/027,997
Date Filed: December 20, 2001
Title: METHOD FOR INCREASING THE LONG-TERM STABILITY OF
EXHAUST SYSTEM CATALYSTS
Art Unit: 1754
Examiner: T. Vanoy

November 6, 2002

Commissioner for Patents
United States Patent and Trademark Office
Washington, DC 20231

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RESPONSE

Dear Sir:

In response to the Office Action dated May 9, 2002, reconsideration of the above-referenced application is respectfully requested for the reason that follow.

35 USC § 103

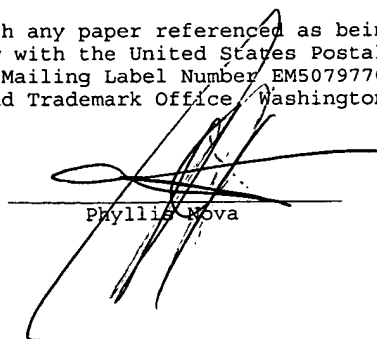
Claims 1-4 have been rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 5,316,738 to Kojima, et al. (Kojima) in view of U.S. Patent No. 3,211,534 to Ridgway (Ridgway) for the reasons presented at pages 3-5 of the Office Action.

The present invention as claimed in claim 1, is directed to a method of increasing the stability of catalysts for purifying exhaust gases of an internal combustion engine wherein the exhaust gas comprises volatile phosphorus compounds. The method comprises

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metering the metal or metal compound for conversion of the volatile phosphorus compound into fine, inert, non-volatile solid compounds in the exhaust gas of the catalyst. The non-volatile solid particles are so fine that they pass unstopped through the entire exhaust.

The difference between the amended claims of the present invention and Kojima is that the present claims call for metering the metal or metal compound for reaction with the phosphorus compounds into the exhaust gas separately from the engine oil and the fuel. The result is inert, non-volatile solid particles which are so fine that they pass unstopped through the entire exhaust. The Examiner cites Kojima at col. 7, lines 15-24 as prior art disclosing that, "the metal /metal compounds may be dispersed into the gasoline (evidently, so that the exhaust gas carries the metal/metal compound from the gasoline combustion pistons)." (O.A. page 4, lines 12-13)

Kojima also discloses that in order to prevent poisoning by phosphorus and/or silicon compounds of a catalytic converter, a poisoning-preventive supported layer is required. The layer is shown to be located at the catalyst. This is different than the present as recited in Claim 1 which is directed to a method wherein no such layer is required. This is not disclosed or suggested in Kojima.

In order to compensate for the deficiency of Kojima, it is combined with the disclosure of Ridgway (O.A., page 4, line 14). Ridgway is cited as disclosing, "a similar method for removing catalyst poisons (i.e., lead compounds) out of exhaust gases from internal combustion engines by spraying reactants (i.e., copper and vanadium oxides) into the exhaust gas". In particular Ridgway is cited at column 15, lines 1-72.

However, Ridgway does not add copper and vanadium oxides to react with the lead. Ridgway discloses using these metal oxides as catalysts which avoid poisoning and not to treat the poison (lead). (Ridgway, column 15, lines 15-32)

Additionally, Ridgway does not disclose or suggest the treatment of volatile phosphorus compounds as recited in claim 1. Nor does Ridgway disclose or suggest specific embodiments of the present

invention such as: or the use of Group 1A, 2A, or 3A metals as recited in amended claim 4.

It would not be obvious to combine the disclosure of Kojima which is directed to treating phosphorus and silicon poisons using Group IIA compounds, with the disclosure of Ridgway which is directed to the avoiding lead poison and not treating the poison (lead). Ridgway uses copper (Group IB) and vanadium (Group VB) compounds as exhaust treatment catalysts which are added to the exhaust stream. Such materials are not used for poison treatment. There is no basis or motivation for the skilled artisan to combine such disclosure of different methods relating to different chemical reactions.

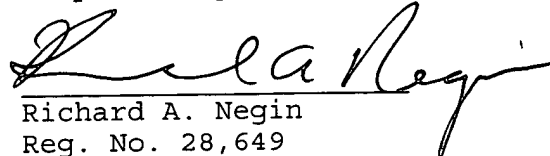
The "Response to Arguments" beginning at page 5 of the Office Action, does not provide any basis for obviousness of the claimed step of, "metering a metal or metal compound for conversion of the volatile phosphorus compound into non-volatile solid compounds in the form of fine inert solid particles into the exhaust gas, separately from the engine oil and the fuel". Kojima makes no disclosure of adding anything to the exhaust gas, and Ridgway is adding additional "catalyst" to the exhaust stream. The arguments provide no basis in the references to render the present claims obvious.

For the above reasons, withdrawal of the rejection of all of the claims under 35 USC § 103 is respectfully requested.

Applicants believe that this application is now in condition for allowance of all claims therein, and such action is respectfully requested. If the Examiner disagrees or believes that for any other reason direct contact with applicants' attorney would advance the prosecution of this application to finality, the Examiner is invited to telephone the undersigned at the number given below.

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Respectfully submitted,


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